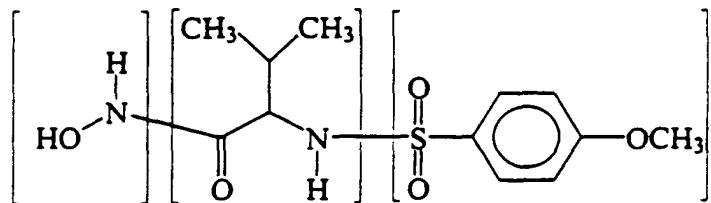
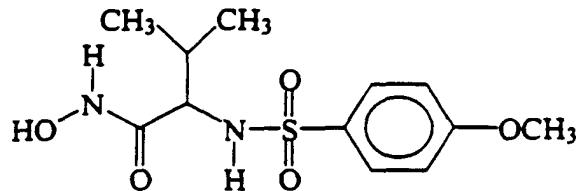


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Title: GENERATION OF VIRTUAL COMBINATORIAL LIBRARIES OF COMPOUNDS  
Inventors: Richard Griffey and Eric Swayze  
Atty: Paul K. Legaard - Telephone: 215 568 3100

Sheet 1 of 20

### Compound CI



F<sub>i</sub>

Molecular formula

H<sub>2</sub>NO

F<sub>ii</sub>

C<sub>5</sub>H<sub>9</sub>NO

F<sub>iii</sub>

C<sub>7</sub>H<sub>7</sub>O<sub>3</sub>S

Figure 1

APPROVED	O.G. FIG.
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Sheet 2 of 20

### Addition of fragments to yield compounds

Table

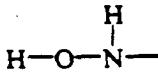
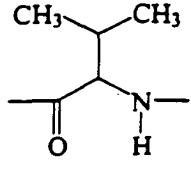
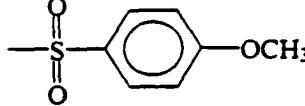
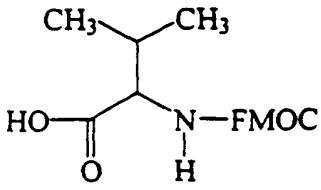
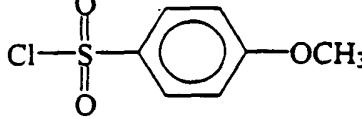
Fragment Identifier	Structure	Name	Molecular formula	Other
F <sub>i</sub>		Hydroxylamine	H <sub>2</sub> NO	...
F <sub>ii</sub>		Amino acid	C <sub>5</sub> H <sub>9</sub> NO	...
F <sub>iii</sub>		Sulfonyl	C <sub>7</sub> H <sub>7</sub> O <sub>3</sub> S	...

Figure 2

APPROVED	O.C. FIG.
BY	CLASS SUBCLASS
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Sheet 3 of 20

Reagents	Identifier	Name	Properties
H—O—NH <sub>2</sub> or  O—NH <sub>2</sub>	R <sub>i</sub>	Hydroxylamine	...
	R <sub>ii</sub>	FMOC blocked amino acid	...
	R <sub>iii</sub>	Sulfonylchloride	...

 = Solid support

092306434704

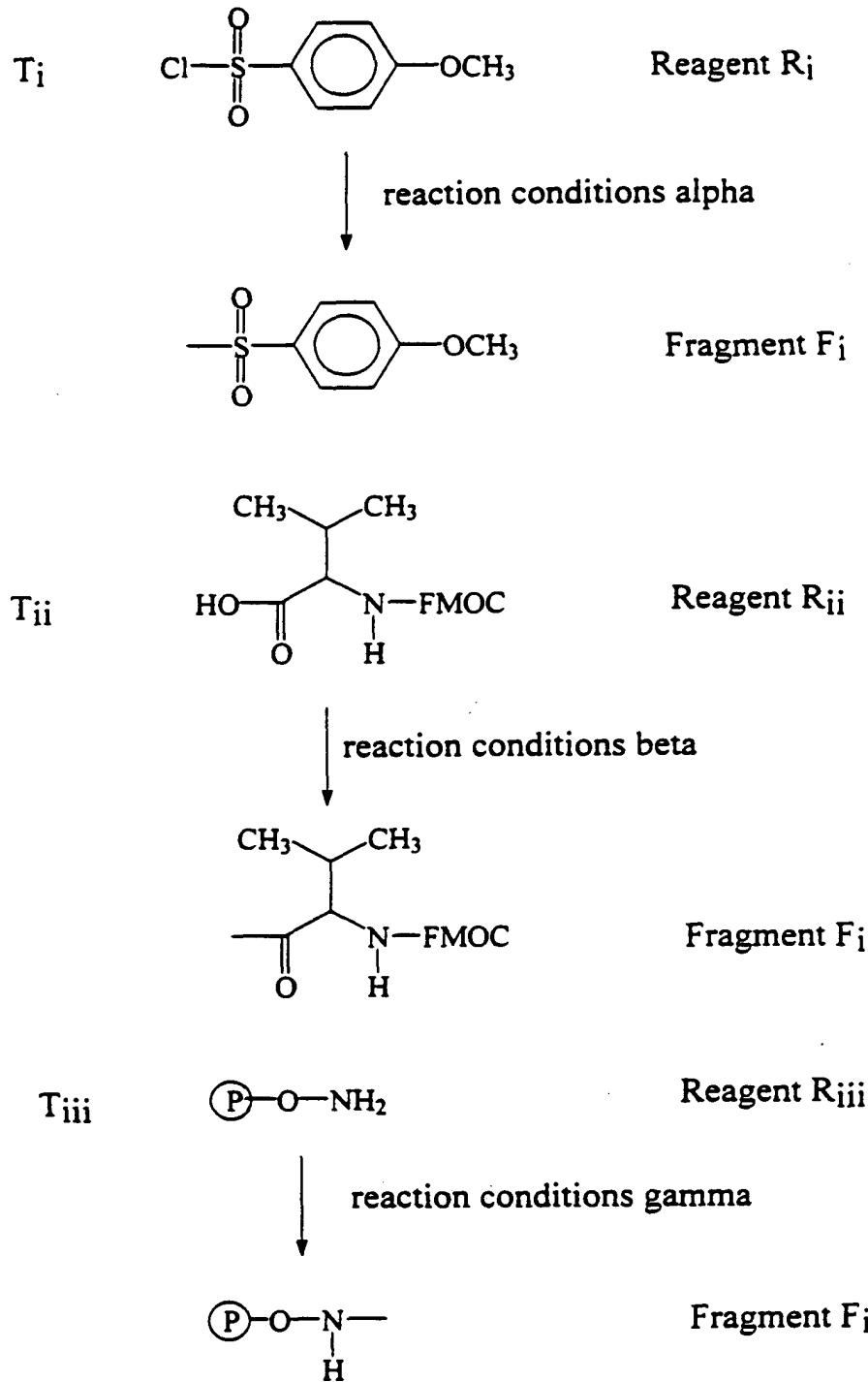
Figure 3

APPROVED	<input type="checkbox"/>	CLASS	5CLASS
BY			
DRAFTSMAN			

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Sheet 4 of 20

### Transformation



(P) = Solid support

Figure 4

APPROVED BY	O.C. FIG. CLASS SUBCLASS
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Sheet 5 of 20

## Common Fragment / Different Reagents and Transformations

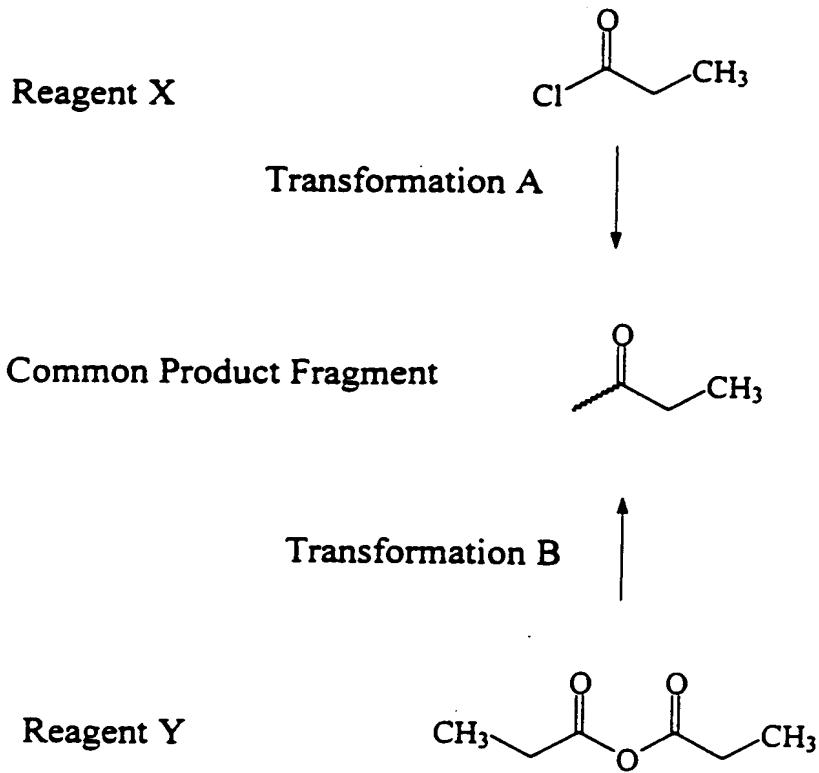


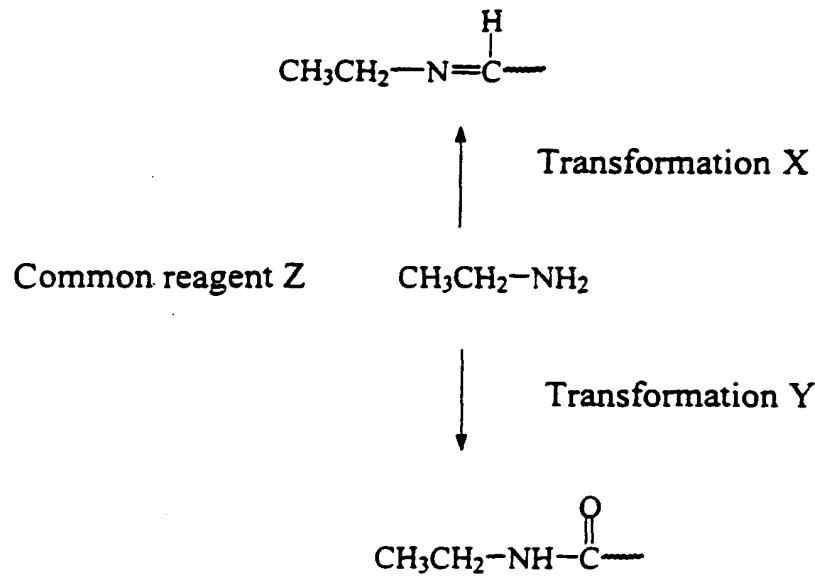
Figure 5

APPROVED	O.G. FIG.
BY	CLASS-HECLASS
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## Common Fragment / Different Reagents and Transformations



卷之三

Figure 6a

APPROVED	O.G. FIG.
BY	CLASS
DRAFTSMAN	SUBCLASS

Docket No.: IBIS-0339  
 Title: GENERATION OF VIRTUAL COMBINATO  
 LIBRARIES OF COMPOUNDS  
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Sheet 7 of 20

### Common Reagent

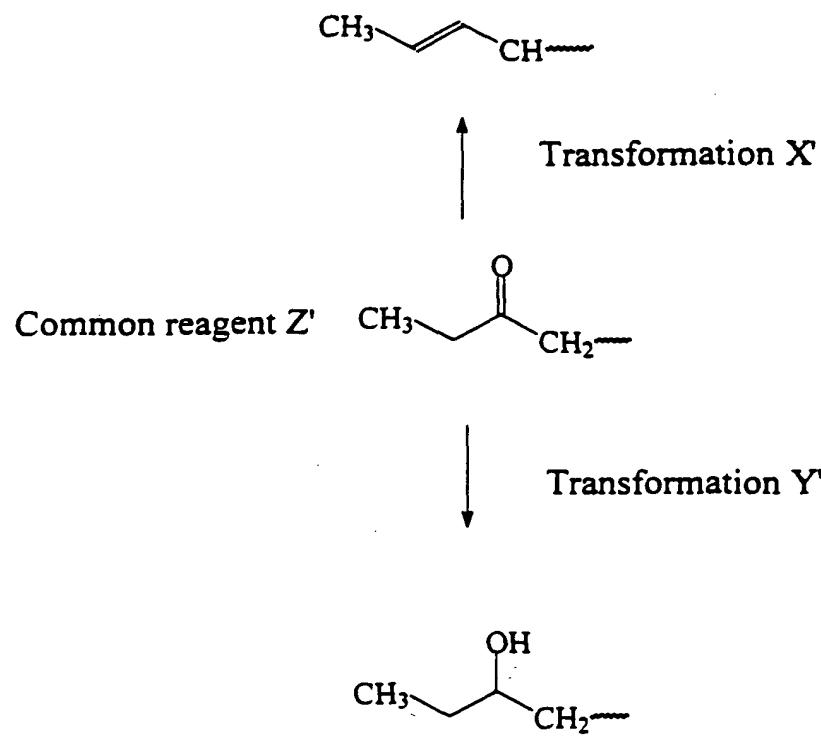


Figure 6b

09755262 - 054604

APPROVED BY	O.G. FIG.
DRAFTSMAN	CLASS SUBCLASS

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Sheet 8 of 20

### Symbolic addition of fragments to yield compound

Symbolic Structure    Symbolic Identifier    Molecular formula

#### Fragment



F<sub>i'</sub>

C<sub>u</sub>H<sub>v</sub>N<sub>w</sub> ...



F<sub>ii'</sub>

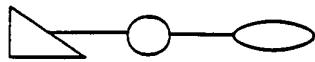
C<sub>u</sub>H<sub>v</sub>N<sub>w</sub> ...



F<sub>iii'</sub>

C<sub>u</sub>H<sub>v</sub>N<sub>w</sub> ...

#### Compound



C<sub>I'</sub>

C<sub>u</sub>H<sub>v</sub>N<sub>w</sub> ...

$$\begin{aligned}
 & \text{Molecular formula } F'_i \\
 & + \\
 & \text{Molecular formula } F_{ii'} \\
 & + \\
 & \underline{\text{Molecular formula } F_{iii'}} \\
 & = \text{ Molecular formula } C_I'
 \end{aligned}$$

Figure 7

APPROVED BY	O.G. FIG. CLASS	SUBCLASS
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Sheet 9 of 20

### Symbolic Reagent Table

<u>Identifier</u>	<u>Name</u>	<u>Structure</u>	<u>Molecular formula</u>
R1	xxx		xxx
R2	...		...
R3	...		...
R4	...		...
R5	...		...
R6	...		...
R7	...		...
R8	...		...
R9	...		...
R10	...		...

Figure 8

APPROVED BY	O.G. FIG.
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Sheet 10 of 20

### Symbolic Fragment Table

<u>Identifier</u>	<u>Symbolic Structure</u>	<u>Molecular formula</u>	<u>Molecular Weight</u>
F1		xxx	xxx
F2		...	...
F3		...	...
F4		...	...
F5		...	...
F6		...	...
F7		...	...
F8		...	...

Figure 9

APPROVED BY	O.G. FIG.
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Sheet 11 of 20

### Symbolic Transformation Table

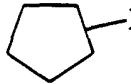
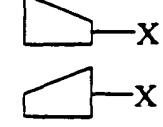
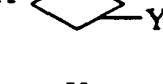
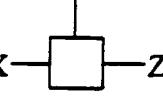
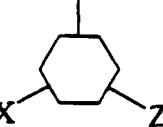
<u>Identifier</u>		<u>Symbolic Reactions</u>	<u>Reagent</u>
T1	F1	 ← R1	conditions $\alpha$
T2	F2	 ← R2	conditions $\beta$
T3	F3	 ← R3	conditions $\alpha$
T4	F3	 ← R4	conditions $\alpha$
T5	F4	 ← R5	conditions $\alpha$
T6	F5	X —  ← R6	conditions $\epsilon$
T7	F5	X —  ← R7	conditions $\alpha$
T8	F6	X —  ← R8	conditions $\alpha$
T9	F7	X —  ← R9	conditions $\gamma$
T10	F8	 ← R10	conditions $\gamma$

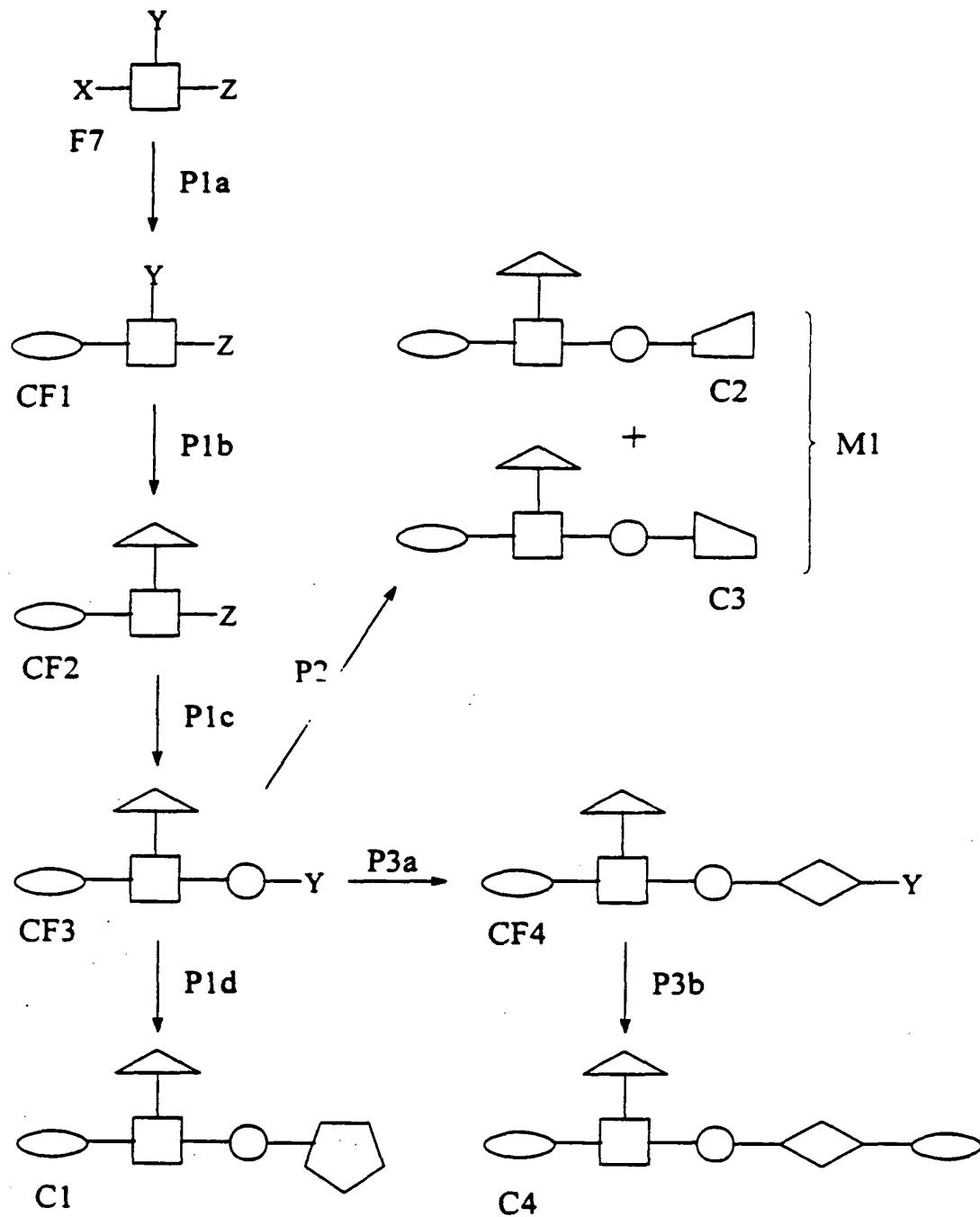
Figure 10

APPROVED	O.G. FIG.
BY	CLASS SUBCLASS
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Sheet 12 of 20

## Single Compounds and Mixtures



**P** = synthetic path    **CF** = complex fragment  
**F** = fragment            **M** = mixture  
**C** = compound

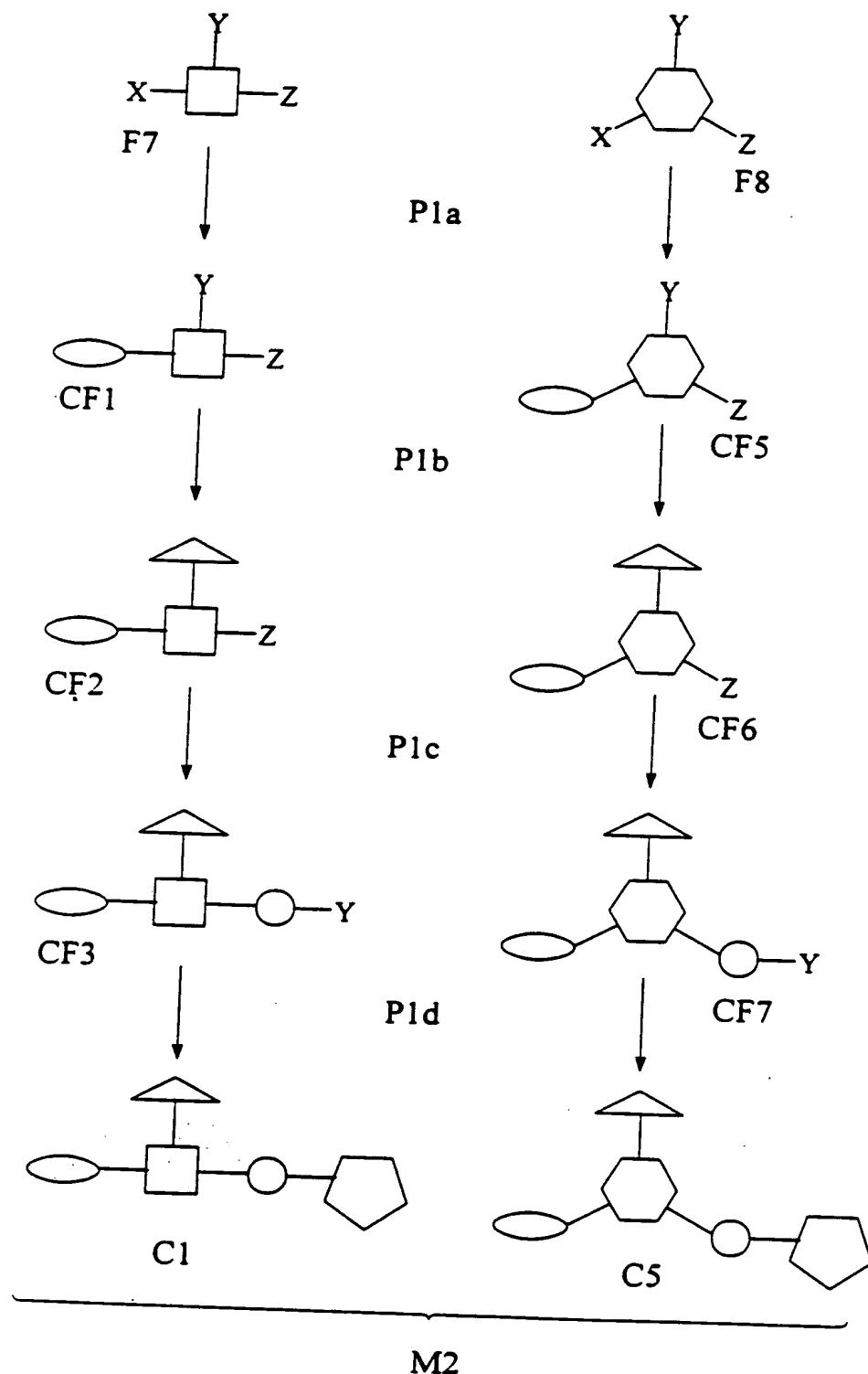
Figure 11

APPROVED BY	O.G. FIG.
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Sheet 13 of 20

## Mixture 2



**Figure 12**

APPROVED	O.G. FIG.
BY	CLASS SUBCLASS
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Sheet 14 of 20

### Mixture 3

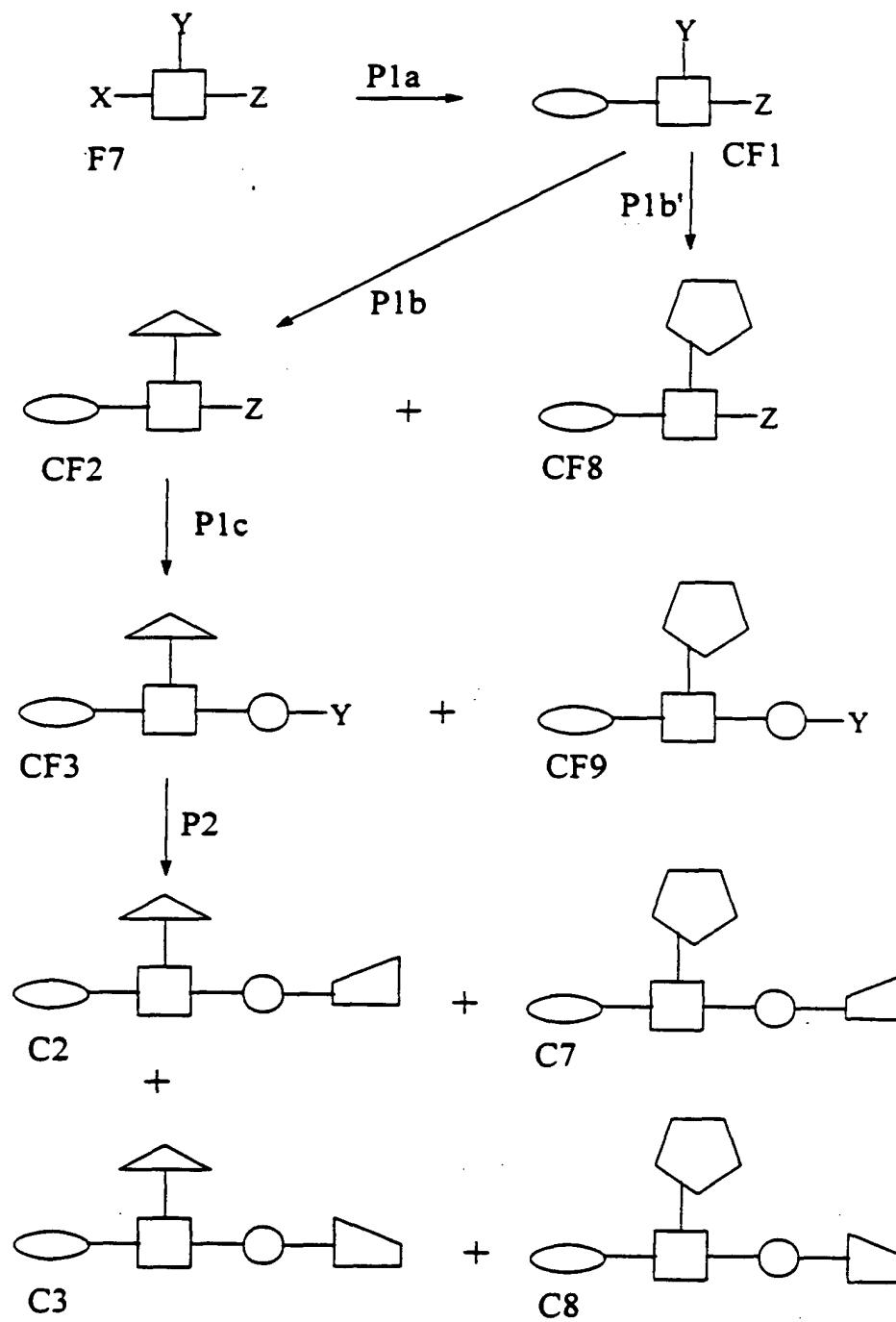


Figure 13

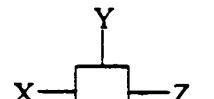
APPROVED BY	O.G. FIG.
	CLASS SUBCLASS
DRAFTSMAN	

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 THE GENERATION OF VIRTUAL COMBINATORIAL  
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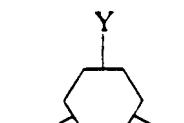
Sheet 15 of 20

### Mixture 4

#### 2 Starting Fragments

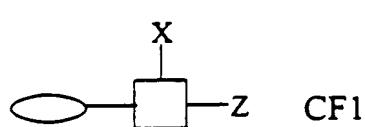


F7

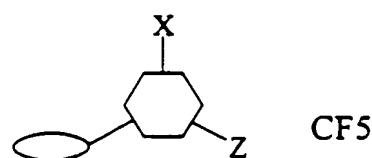


F8

#### 2 Complex Fragments

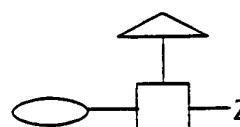


CF1

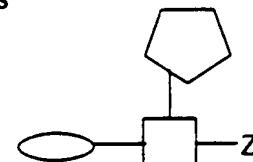


CF5

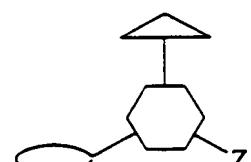
#### 4 Complex Fragments



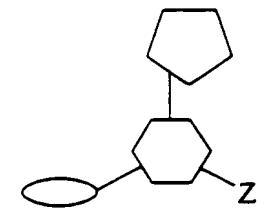
CF2



CF8

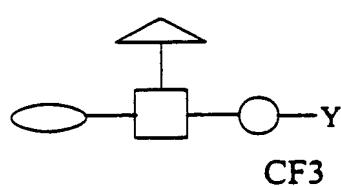


CF6

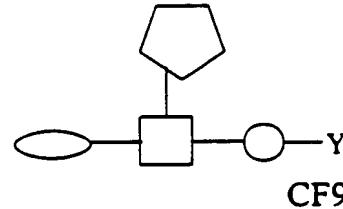


CF11

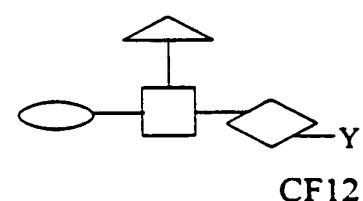
#### 8 Complex Fragments



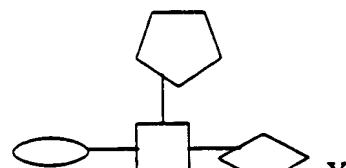
CF3



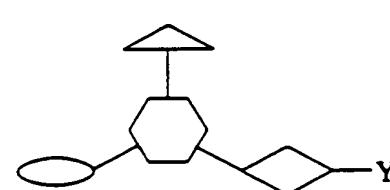
CF9



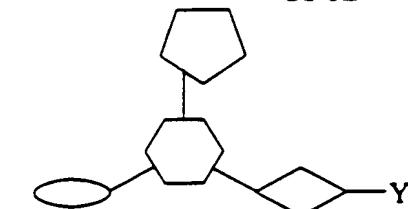
CF12



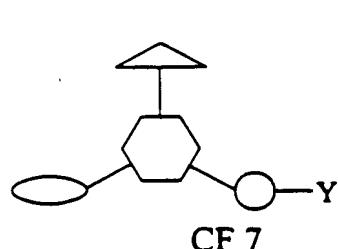
CF13



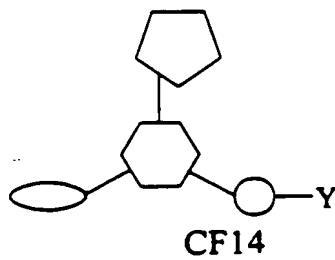
CF15



CF16



CF7



CF14

Figure 14a

APPROVED	O.G. FIG.
BY	
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Doc. No.: IBIS-0339  
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Sheet 16 of 20

### Mixture 4 (continued)

16 compounds

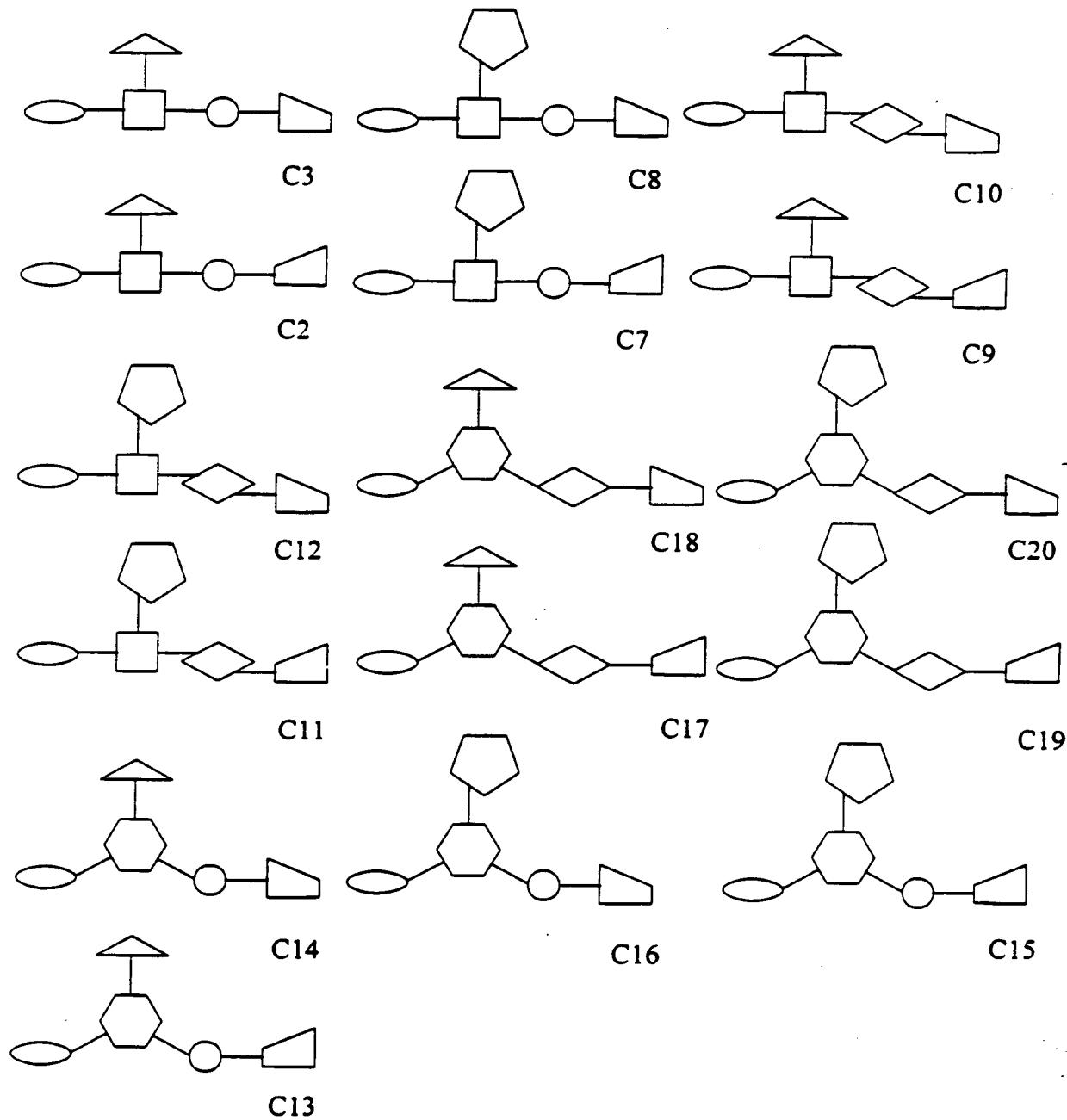


Figure 14b

APPROVED BY	O.G. FIG.
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Sheet 17 of 20

### Tracking Table for Compound C1

#### (a) By Fragments:

$n$	$n+1$	$n+2$
F7		
	F2	
	F1	
	F5	
		F3

#### (b) By Transformations:

##### Synthesis Path 1

$n$	$n+1$	$n+2$
T9		
	T2	
	T1	
	T6	
		T3

##### Synthesis Path 2

$n$	$n+1$	$n+2$
T9		
	T2	
	T1	
	T7	
		T3

##### Synthesis Path 3

$n$	$n+1$	$n+2$
T9		
	T2	
	T1	
	T6	
		T4

##### Synthesis Path 4

$n$	$n+1$	$n+2$
T9		
	T2	
	T1	
	T7	
		T4

Figure 15

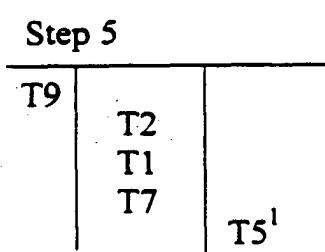
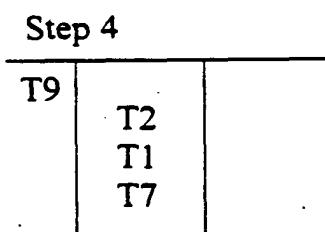
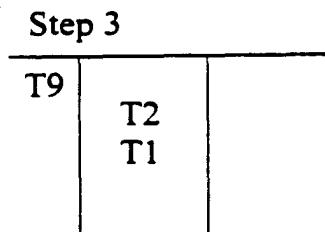
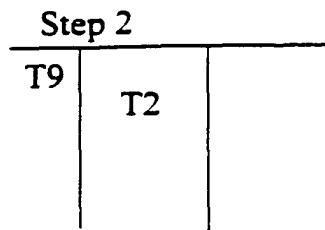
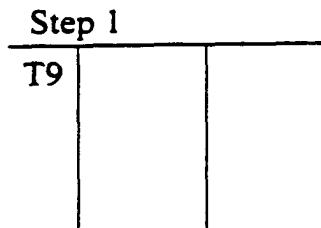
APPROVED	O.G. FIG.
BY	CLASS
DRAFTSMAN	SUBCLASS

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 Title: GENERATION OF VIRTUAL COMBINATORIAL LIBRARIES OF COMPOUNDS  
 Inventors: Richard Griffey and Eric Swayze  
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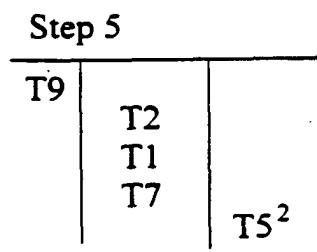
Sheet 18 of 20

### Tracking Table

#### Tracking M1



C2



C3

Figure 16

APPROVED BY DRAFTSMAN	O.G. FIG. CLASS	SUBCLASS
-----------------------------	--------------------	----------

cket No.: IBIS-0339  
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Sheet 19 of 20

### Tracking Table

#### Tracking M2

Step 1		
n	n+1	n+2
T9		

Step 1		
n	n+1	n+2
T10		

Step 2		
n	n+1	n+2
T9	T2	

Step 2		
n	n+1	n+2
T10	T2	

Step 3		
n	n+1	n+2
T9	T2 T1	

Step 3		
n	n+1	n+2
T10	T2 T1	

Step 4		
n	n+1	n+2
T9	T2 T1 T7	

Step 4		
n	n+1	n+2
T10	T2 T1 T7	

Step 5		
n	n+1	n+2
T9	T2 T1 T7	T4

Step 5		
n	n+1	n+2
T10	T2 T1 T7	T4

C1

C5

Figure 17

APPROVED BY	O.G. FIG.
DRAFTSMAN	CLASS SUBCLASS

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Sheet 20 of 20

### Tracking Table

#### Tracking M3

##### Step 1

T9	
----	--

##### Step 2

T9	T2
----	----

##### Step 3

T9	T2
	T1

##### Step 3

T9	T2
	T3

##### Step 4

T9	T2
	T1
	T7

##### Step 4

T9	T2
	T3
	T7

##### Step 5

T9	T2
	T1
	T7
	T5 <sup>1</sup>
	C2

##### Step 5

T9	T2
	T1
	T7
	T5 <sup>2</sup>
	C3

##### Step 5

T9	T2
	T3
	T7
	T5 <sup>1</sup>
	C7

##### Step 5

T9	T2
	T3
	T7
	T5 <sup>2</sup>
	C8

Figure 18